

## WHAT IS CLAIMED IS :

1. A carbohydrate peptide conjugate comprising :  
a carrier comprising a dendrimeric poly-Lysine enabling multiple epitopes to be covalently attached thereto,  
5       at least one peptide comprising one T epitope or several identical or different T epitopes,  
at least one carbohydrate moiety, or a derivative thereof, containing B epitope, provided it is not a sialoside, or several identical or different epitopes.
- 10       2. A conjugate according to claim 1 wherein said dendrimeric poly-Lysine forms a 4 branches star, with an epitope T covalently bound to each lysine of the branches of said carrier.
3. A conjugate according to claim 1 or 2 which comprises at least 3 lysines and up to 15 lysines covalently linked to one another.
- 15       4. A conjugate according to any one of claims 1 to 3 wherein to the NH<sub>2</sub> end of at least two lysine residues is bound at least to one peptide comprising one epitope T and wherein the carbohydrate moiety is covalently bound to the end of said peptide opposite to the lysine.
5. A conjugate according to any one of claims 1 to 3 wherein to the  
20       NH<sub>2</sub> end of at least two lysine residues is bound at least one carbohydrate residue being not a sialoside, optionally substituted and forming a B epitope and wherein the peptide comprising one T epitope is covalently bound to the end of said carbohydrate.
6. A conjugate according to any one of claims 1 to 5 wherein the  
25       carbohydrate moiety is galactosyl.
7. A conjugate according to any one of claims 1 to 4 which comprises 3 lysine residues, at least 4 epitopes of the T type, which may be the same or different, linked to the NH<sub>2</sub> ends of 2 of the lysine residues and 4  $\alpha$ -galactosyl-Nacetyl-Serine residues.

8. A conjugate according to claims 1 to 7 wherein the carbohydrate moiety is a galactosyl residue and is substituted by another glycosyl residue.

5 9. A conjugate according to claims 1 to 8 wherein the carbohydrate is a tumor antigen.

10. A conjugate according to claims 1 to 9 wherein the epitope T is the 103-115 peptide of the VP1 protein of poliovirus type 1.

10 11. A conjugate according to claims 1 to 10 wherein the carbohydrate is grafted in combination with a tumor peptidic CD8<sup>+</sup> T cell epitope.

12. A conjugate according to claims 1 to 8 or 11 wherein the carbohydrate is of bacterial or fungal origin.

15 13. A conjugate according to claim 12 wherein the carbohydrate is from capsular bacterial polysaccharides selected from the group consisting of *Neisseria meningitis*, *Haemophilus influenza*; *Streptococcus pneumonia* and other *Streptococcus* species, with the exception of sialylated polysaccharides.

20 14. A conjugate according to claim 1 wherein the carbohydrate is selected from the group consisting of Tn antigen di-Tn antigen, tri-Tn antigen, T\* antigen and hexa-Tn antigen.

15. A carbohydrate peptide conjugate comprising :

at least one peptide comprising one T epitope, or several identical or different T epitopes, and

25 at least one carbohydrate moiety, or a derivative thereof, containing B epitope, provided it is not sialoside, or several identical of different epitopes.

30 16. A carbohydrate peptide conjugate according to claim 15 wherein the carbohydrate moiety is selected from the group consisting of Tn antigen, di-Tn antigen, Tri-Tn antigen, hexa-Tn antigen and T\* antigen.

17. A linear carbohydrate peptide conjugate comprising:

- at least one peptide comprising one T-epitope, or several identical or different T-epitopes, and

- at least one carbohydrate moiety, or a derivative thereof, containing a B-epitope, provided it is not a sialoside.

5        18. The linear carbohydrate peptide conjugate of claim 17, wherein the peptide and the carbohydrate moiety are directly covalently bound.

19. The linear carbohydrate peptide conjugate of claim 17, wherein the peptide and the carbohydrate moiety are linked via a spacer.

20. The linear carbohydrate peptide conjugate of claim 19, wherein  
10 the spacer consists of an amino acid chain.

21. The linear carbohydrate peptide conjugate of claim 19, wherein the spacer consists of a carbohydrate residue or of a chain of multiple carbohydrate residues.

22. The linear carbohydrate peptide conjugate of claim 17, wherein  
15 the carbohydrate moiety is selected from the group consisting of one to six residues of a Tn antigen, a T\* antigen or a Tn antigen derivative.

23. A carbohydrate peptide conjugate comprising:

at least one peptide comprising one T epitope or several identical or different T epitopes, wherein at least one T epitope consists of a  
20 cytotoxic T cell (CTL) epitope.

24. A pharmaceutical composition comprising the conjugate according to anyone of claims 1 to 23 and a suitable carrier.

25. A pharmaceutical composition comprising the conjugate according to any one of claims 1 to 23 and a suitable carrier and  
25 adjuvant.

26. A vaccine comprising the conjugate according to any one of claims 1 to 23.

27. An immunogenic composition comprising at least one carbohydrate peptide conjugate according to claims 1 to 23 capable to  
30 elicit an immune response against a viral infection caused by a pathogen such as hepatitis virus, HIV or CMV.

28. An immunogenic composition comprising at least one carbohydrate peptide conjugate according to claims 1 to 23 wherein said composition is capable of increasing the survival of tumour bearing human or animal.

5        29. The immunogenic composition comprising at least one carbohydrate peptide conjugate according to claim 28 wherein said conjugate comprises various carbohydrate antigens to induce more efficient anti-tumour immunity against cancers.

30. An immunogenic composition comprising a carbohydrate  
10 peptide conjugate according to any one of claims 1 to 22 in combination with a peptide comprising at least one CTL epitope.

31. An immunogenic composition of Tn molecules capable of enhancing the immune response after coupling said Tn molecule or Tn derivatives on a carrier consisting of a linear peptide or of a dendrimeric  
15 peptide or of a protein.

32. Immunogenic composition of Tn molecules capable of enhancing the immune response after coupling the said Tn or Tn derivatives on a carrier consisting in a linear peptide or a dendrimeric peptide or a protein.

20        33. A method of enhancing the immune response of a human or animal body, in particular B and / or T-cell responses, wherein the conjugate according to claims 1 to 23 is administered to said human or animal body.

34. A method for enhancing the immune response of a human or  
25 animal body in particular B and/or T-cell responses against bacteria , wherein the conjugate according to claim 12 or 13 is administered to said human or animal body.

35. A method of inducing a B-cell response in a human or animal  
30 body, wherein the conjugate according to claims 1 to 23 is administered to said human or animal body.

36. Method of vaccination of a human or animal body wherein the conjugate according to claims 1 to 23 is administered to said human or animal body.

37. An antibody purified from biological fluid or cells of organisms  
5 administered with a conjugate according to claims 1 to 23.

38. A diagnosis kit comprising antigen specific antibodies elicited by immunization of a human or animal body with a conjugate according to claims 1 to 23.

39. A method for the diagnosis of cancer wherein a biological  
10 sample is bringing into contact with at least one antibody according to claim 36 and wherein one determines the formation of complexes between this antibody and molecules comprised in the said sample.

40. A method for enhancing a T-CD4<sup>+</sup> immune response against an antigen within a human or animal body, wherein the conjugate according  
15 to any one of claims 1 to 23 is administered to said human or animal body.

41. A method for priming a cytotoxic T cell response in a human or animal body, wherein a conjugate according to claim 23 comprising at least one CTL epitope is administered to said human or animal body.

20 42. A method for priming a cytotoxic T cell response in a human or animal body, wherein an immunogenic composition according to claim 24 is administered to said human or animal body.